



May 23, 2001

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Authorization & Evaluation Division
Federal Communications Commission Laboratory
7435 Oakland Mills Road
Columbia, MD 21046

Re: Form 731 Confirmation Number: EA 100397 with FCC ID: AZ489FT5803.

Gentlemen;

Motorola Inc., 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322, herein submits its response to the May 17, 2001 request for information on FCC ID: AZ489FT5803, EA100397 via correspondence number 19312.

Q1. The differences in head and body dielectric parameters are about - 20% in dielectric constant and 20% in conductivity. These values should be within 5% of those specified by IEEE. Either re-test, find ways to selectively re-test to show compliance for the head configurations. (also see other related issues below)

A1. Motorola has historically used Muscle mixture for face measurements as disclosed to the FCC in all prior SAR Test Reports for portable two way radios; this practice has never before been questioned and is considered valid for the following reasons:

1. Muscle solution has higher conductivity and should yield overestimation of SAR.
2. In the area of interest at feed of the antenna generally contains the eye which has conductivity values closer to muscle than brain.
3. Separation of the phantom to allow muscle mixture in the body and brain mixture in the head would be difficult.
4. The location of maximum SAR is generally found at body worn positions. The small size and curved shape of the head, in addition to the additional loading by the hand generally lead to reduced coupling to the antenna and therefore lower SAR measurements when compared with the body worn positions.
5. The impact of the increased permittivity on the probe sensitivity should be minimal due to the broadband characteristics of the miniature dipoles.

Q2. They only provided 2 SAR numbers for this device with 2 antenna configuration, 19 body-worn accessories and 6 battery options. It operates in the 896-902 MHz and 935-941 MHz band. Each band should be tested. Those 2 SAR numbers were obtained with 1 of the 2 available antennas, one for head and one for body. This is not sufficient for demonstrating SAR compliance. These types of issues and what needs to be tested etc. have been discussed in at least two previous filings, EA 98411 and EA 98633. You should review the SAR report for those EA numbers and re-test and fix the SAR report as discussed with those two previous filings (specifically Section 7).

A2. To facilitate FCC review of the application Motorola typically presents the highest measured and calculated SAR by body position; results of all scans are contained in the DASY output files and are available upon request. For this product the SAR report indicates in section 5.0 that all antennas, batteries and body-worn accessories were included to determine the highest SAR configuration. The two configurations that measured the highest SAR for both body positions are identified in section 7.0. For your clarification Table 1, below, compares both antennas with both TX bands and indicates that antenna NAF5042A at 899MHz results in the highest measured SAR.

Table 1: Antenna and Frequency Comparison

Body-worn accessories	Body position	Antenna	Test Freq. MHz	Battery	Measured SAR
HLN9844A	Abdomen	NAF5038A	899	HNN9008A	4.35
HLN9844A	Abdomen	NAF5038A	938	HNN9008A	2.62
HLN9844A	Abdomen	NAF5042A	899	HNN9008A	5.74
HLN9844A	Abdomen	NAF5042A	938	HNN9008A	3.02

Q3. All 2 antennas should be tested for both head and body configurations. If there are supporting info to demonstrate these configurations can be selectively tested to show compliance, it should be clearly explained in the SAR report. We will determine if that would be acceptable. Address if the battery options could affect either head or body SAR compliance.

A3. The SAR report indicates in section 5.0 that all antennas, batteries and body-worn accessories were included to determine the highest SAR configuration. The two configurations that measured the highest SAR for both body positions are identified in section 7.0. Again for your clarification, Table 2, below, illustrates that both antennas were tested at both the abdomen and face. Antenna NAF5042A was the highest measured SAR at both positions.

Table 3, below, illustrates that all 6 batteries were tested to determine which battery produced the highest measured SAR.

Table 2: Antenna and Body Position Comparison

Body-worn accessories	Body position	Antenna	Test Freq. MHz	Battery	Measured SAR
HLN9844A	Abdomen	NAF5038A	899	HNN9008A	4.35
HLN9844A	Abdomen	NAF5042A	899	HNN9008A	6.49
NA	Face	NAF5038A	899	HNN9008A	0.61
NA	Face	NAF5042A	899	HNN9008A	1.36

Table 3: Battery Comparison

Body-worn accessories	Body position	Antenna	Test Freq. MHz	Battery	Measured SAR
HLN9844A	Abdomen	NAF5038A	899	HNN9008A	4.35
HLN9844A	Abdomen	NAF5038A	899	HNN9009A	3.17
HLN9844A	Abdomen	NAF5038A	899	HNN9010A	3.25
HLN9844A	Abdomen	NAF5038A	899	HNN9011A	2.38
HLN9844A	Abdomen	NAF5038A	899	HNN9012A	2.85
HLN9844A	Abdomen	NAF5038A	899	HNN9013B	4.29

Q5. The SAR does not comply with general population SAR limit. Show how the users going to be trained on RF exposure requirements to satisfy occupational exposure limit.

A5. This device will be marketed to and used by employees of public safety agencies, e.g. police, fire and emergency medical, solely for work-related operations. User training is the responsibility of these agencies, who can be expected to employ the usage instructions, safety information and operational cautions set forth in the user's manual, instructional sessions or other means. Motorola also makes available to its customers training classes on the proper use of two-way radios.

Contact me at (954) 723-5793 if you require any additional information.

Regards,
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 FCC Liaison
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